

CHEMICAL COMPOSITION

1 FIELD OF THE INVENTION

2 This invention relates to a chemical
3 composition and more particularly to a
4 microcrystalline wax composition for binding a
5 petroleum solvent so as to result in a creamy smooth
6 product with a variety of applications.

7

8 BACKGROUND OF THE INVENTION

9 Hydrocarbons are chemical compounds of hydrogen
10 and carbon, also referred to as organic compounds.
11 Carbon atoms form the skeleton of the hydrocarbon
12 molecule and may be arranged in chains (aliphatic)
13 or rings (cyclic). There are three principal types
14 of hydrocarbons that occur naturally in petroleum:
15 paraffins, naphthenes and aromatics. Paraffins are
16 aliphatic, while the other two are cyclic.

17 The most common petroleum solvents are mineral
18 spirits, xylene, toluene, hexane, heptane, and
19 naphthas. Aromatic-type solvents have the highest
20 solvency for organic chemical materials, followed by
21 naphthenes and paraffins. In most chemical
22 compositions comprising solvents, the solvent
23 disappears, usually by evaporation, after it has
24 served its purpose. Some solvents, particularly
25 aromatics, pose serious physical and health hazards.

26 Petroleum solvents have multiple industrial and
27 home applications and are used in paints, adhesives,
28 as paint thinners, paint strippers, aerosol sprays,
29 dry-cleaning fluid, charcoal lighter, degreasers,
30 nail polish removers, and are present in textiles,
31 plastics, waxes and many other products. Liquid

1 petroleum solvents are highly volatile, which makes
2 them a fire hazard, as well as a health hazard due
3 to their rapid evaporation rates, inhalation or
4 exposure risks, and disposal problems.

5 Petroleum wax is a relatively high molecular-
6 weight hydrocarbon (approximately C16 to C50), solid
7 at room temperature and derived from higher boiling
8 petroleum fractions. There are three general types
9 of petroleum-derived wax: paraffin, microcrystalline
10 and petrodatum. Microcrystalline waxes differ in
11 that the crystal structure is more branched and the
12 carbon chains are longer. Microcrystalline waxes
13 are typically more flexible and have higher tensile
14 strengths and melting points. They are also more
15 adhesive and bind with solvents. When used in
16 chemical compounds, microcrystalline waxes are
17 typically ground up into micronized particles and
18 combined with water or solvents as emulsions or
19 dispersions.

20 In order to reduce the risk of use in handling
21 of petroleum solvents, the present invention
22 includes a method of mixing petroleum solvents into
23 a stable composition that is less volatile and less
24 of a hazard, yet still has multiple applications.

25 Prior art U.S. Patents petroleum solvents and
26 paraffins include Tanner, U.S. Patent No. 4,043,765,
27 dated August 23, 1977 for Artificial Fireplace Logs
28 with Ignition Strips. Tanner describes that a
29 suitable thickener may be mixed with a fuel to form
30 a paste and lists a variety of useful thickeners.
31 The thickener may be added to the fuel with the use
32 of heat as an aid in formation of the paste. U.S.
33 Patent No. 5,226,405 to Snow dated July 13, 1993 is

1 for an Ignition Platform and Fuel Component for
2 Kindling a Fire. Snow uses a fuel composition for
3 impregnating an ignition platform to be used to
4 rapidly ignite coal or charcoal fires or wood in a
5 fireplace. In his composition, Snow includes
6 polyethylene terephthalate (PET) hydrocarbons in a
7 specified range along with a low melt paraffin and
8 microcrystalline wax and may include refined
9 petroleum. Snow describes this composition as
10 burning clean, substantially without smoke, and to
11 be essentially non-volatile, safe to store and
12 transport, and easy to pack and handle.

13 U.S. Patent No. 3,920,415 dated November 18,
14 1975 to Reusser et al. is for Odor Inhibition for
15 Paraffin Hydrocarbons. This patent describes that
16 "odorless mineral spirits" are generally marketed
17 for use as paint thinner, insecticide carrier oil,
18 charcoal lighter fluid, industrial cleaning
19 compounds and general solvents. This invention
20 relies on the addition of 2,4,6-tris-(dimethyl
21 aminomethyl) phenol to inhibit the oxidation of
22 odorless mineral spirits with consequent prevention
23 of odor formation. The Jones U.S. Patent No.
24 6,093,224 of July 25, 2000 is for a Long Burning
25 Fire Starter. The Jones composition comprises
26 odorless mineral spirits and propylene glycol, which
27 are used to saturate a holder made of a mix of
28 diatomaceous earth and wood pellets. Once
29 impregnated with the fuel composition, the holder is
30 overcoated with paraffin wax.

31 The following illustrates the principles,
32 practice, and applications of methods constituting
33 this invention. While this invention is satisfied
34 by embodiments in many different forms, there will

1 herein be described in detail certain embodiments of
2 the invention with the understanding that the
3 present disclosure is to be considered as exemplary
4 of the principles of the invention and is not
5 intended to limit the invention to the embodiments
6 illustrated and described.

7

8 DESCRIPTION OF THE PREFERRED EMBODIMENTS

9 Microcrystalline wax has unique molecular
10 structure which allows it to bind petroleum
11 solvents. At room temperature, however,
12 microcrystalline wax does not readily combine with
13 petroleum solvents, requiring that the wax be
14 pulverized into small pieces in order to create a
15 solvent-borne wax dispersion. The particle size of
16 the wax in the dispersion is typically greater than
17 one micron.

18 It has been discovered that melting the
19 microcrystalline wax and pouring it into the solvent
20 while mixing, allows the wax to readily bind to the
21 solvent. Trial and error has shown there must be a
22 sufficient liquid microcrystalline wax-to-solvent
23 ratio in order to bind all of the solvent, resulting
24 in a stable composition that does not separate. For
25 example, this minimum ratio for microcrystalline wax
26 and synthetic mineral spirits is approximately one
27 part wax to four parts of mineral spirits. The
28 resultant combination is a creamy composition that
29 is less volatile and less hazardous than the solvent
30 alone. Additional melted microcrystalline wax
31 increases the thickness of the composition as the
32 mixture increases in wax content. It has also been
33 found that when using a minimal amount of wax to
34 solvent, the resulting composition has waxy lumps.

1 These lumps may be eliminated by adding white oil,
2 isoparaffin or normal paraffin to the mixture, which
3 results in a smoother consistency.

4 **Typical applications of the inventive composition:**

5 The resultant compound has applications by
6 itself, such as a carbonaceous fire lighter or hand
7 cleaner and paint remover. The composition may also
8 be the base stock for other products when combined
9 with various additives. A thicker verison of the
10 composition comprising pumice, a surfactant, and
11 hand emollients results in an effective hand
12 cream/paint remover for oil based paint. Further,
13 the composition can be combined with crushed coal or
14 coal dust for use as a fuel.

15 The solvent that is bound in the composition
16 becomes less volatile and less hazardous and the
17 composition may be used as a base stock for
18 additives to create multiple consumer products.
19

20 **Example 1**

21 The following example is provided to illustrate
22 one method of preparation of the inventive
23 composition, however, those skilled in the art will
24 recognize that other petroleum solvents may be used
25 as well, instead of that presented in the example.

26 Starting with 200 to 800 parts of a synthetic
27 isoparaffinic hydrocarbon, sometimes otherwise
28 referred to as odorless mineral spirit, at room
29 temperature, add 10 to 500 parts of liquid (normal
30 paraffin or isoparaffin) at room temperature and mix
31 vigorously. Heat microcrystalline wax at
32 approximately 180 to 200 degrees Fahrenheit, until
33 it is completely melted. Pour 90 to 700 parts of
34 the melted microcrystalline wax into the solvent and

1 liquid paraffin mixture, then mix vigorously until
2 you have a consistent milky composition. Pour the
3 resulting composition into a suitable container and
4 seal. As it cools, the composition becomes less
5 viscous and forms a creamy liquid. Adding a higher
6 percentage of microcrystalline wax results in a
7 smooth paste that is less viscous. A preferred
8 combination with wide applications as a base
9 composition is 700 parts of natural or synthetic
10 petroleum solvent, to 100 parts of normal paraffin,
11 to 200 parts of melted microcrystalline wax. White
12 oil may be used in place of normal paraffin or
13 isoparaffin to smooth the composition. The
14 percentage combination of ingredients may be varied
15 within the approximate ranges stated, and any
16 natural or synthetic petroleum solvent may be
17 substituted for the example solvent.

18 **Example 2 - Hand cream paint remover**

19 Starting with 40 - 750 parts of synthetic
20 isoparaffinic hydrocarbon (odorless mineral spirits)
21 at room temperature, add 10 to 200 parts of normal
22 paraffin, add 1 to 10 parts of aloe oil, add 1 to 10
23 parts of eucalyptus oil, add 1 to 20 parts of nonionic
24 surfactant and 1 to 20 parts of ionic
25 surfactant and then mix vigorously. Heat
26 microcrystalline wax at approximately 180 to 200
27 degrees Fahrenheit, until it is completely melted.
28 Pour 200- 400 parts of the melted microcrystalline
29 wax into the mixture then stir vigorously until it
30 is evenly mixed. Add 10 to 100 grams of pumice
31 powder per liter and then mix vigorously again. As
32 it cools, the resultant chemical mix becomes less
33 viscous and forms into a gel or hand cream suitable
34 as a hand paint remover for oil based paints,

1 stains, varnish, lacquer or urethane. A preferred
2 composition for use as a hand cream paint remover is
3 670 parts of odorless mineral spirits, to 100 parts
4 of normal paraffin or isoparaffin, to 5 parts of
5 aloe oil, to 5 parts of eucalyptus oil, to 5 parts
6 of ionic surfactant to 5 parts of nonionic
7 surfactant, to 300 parts of melted microcrystalline
8 wax. Add 20 grams of pumice powder per liter.

9 There are multiple benefits to the invention
10 which include: reducing the volatility of petroleum
11 solvents, making the solvents less hazardous to
12 handle and the formation of a stable composition as
13 a base stock for the addition of additives that
14 result in unique industrial and home products.

15 The base composition of 70 parts of synthetic
16 odorless minder spirits, 10 parts of normal
17 paraffin, and 20 parts of melted microcrystalline
18 wax, was tested by an independent testing laboratory
19 to estimate emission rates per start when used as a
20 charcoal lighter. The test was performed in
21 accordance with California's South Coast Air Quality
22 Management District Rule 1174 Ignition Method
23 Compliance Certification Protocol, with the
24 exception that the hydrocarbon results were based
25 upon the continuous hydrocarbon measurements instead
26 of SCAQMD Method 25.1. The Resultant Emission Rate
27 (LB VOC/Start) was 0.0044. The South Coast Air
28 Quality Management District Rule 1174 Limitation is
29 .020. These results indicate that the base
30 composition tested was well within the Rule
31 limitations for Volatile Organic Compounds per
32 start. As a comparison, the best known charcoal
33 lighter has a resultant emission rate of .018 lb
34 VOC's per start.

1 Since the base composition with synthetic
2 odorless mineral spirits gives off such a small
3 amount of volatile organic compounds when burned, it
4 can be added to coal particles or coal dust to
5 fluidize the coal. This facilities pumping of the
6 coal, enhances the coal as a fuel source and reduces
7 the volatile organic compounds in emissions.

8 The base composition with synthetic odorless
9 mineral spirits has significant benefits as a wood
10 stove, wood pellet heater, or fireplace fire
11 starter. The mixture lights easily when applied to
12 carbonaceous materials but does not flare up, due to
13 its low volatility. The mixture is odorless when
14 odorless mineral spirits are used as the solvent.
15 The mixture spreads across the carbonaceous fuel
16 source after lighting. It also burns approximately
17 50% longer than other plain solvent fire starters,
18 such as charcoal lighter or kerosene.

19 As a hand paint remover for oil based paint,
20 the composition offers unique benefits over existing
21 hand paint removers. Typical hand paint removers
22 are made with alcohol, which has limited ability to
23 remove oil based paint. When plain solvents are
24 used on the skin, they tend to dry out or de-fat the
25 skin, which can result in dermatitis. The base
26 composition can be combined with skin emollients,
27 such as aloe, others, such as eucalyptus oil (which
28 has an antiseptic quality and pleasing odor),
29 surfactants and pumice powder to result in a cream
30 hand paint remover that is very effective yet is
31 less damaging to the skin than a plain solvent. The
32 mixture is less volatile than a plain solvent, which
33 makes it less of a fire hazard. It has a pleasant
34 odor, and since a small amount is effective, it

1 doesn't present the disposal problems of a plain
2 solvent.

3 It should be clear at this time that a creamy
4 smooth chemical composition has been provided that
5 is useful in multiple applications. However, the
6 present invention is not to be considered as limited
7 to the examples which are to be considered
8 illustrative rather than restrictive.

9

10 SUMMARY OF THE INVENTION

11 A process for making a chemical composition
12 includes the steps of mixing 200-800 parts by volume
13 of petroleum solvent with 10-500 parts by volume of
14 normal paraffin or isoparaffin at room temperature
15 to form a solvent paraffin mixture. A
16 microcrystalline wax is heated to between 180-200
17 degrees Fahrenheit until melted and 90-700 parts by
18 volume of a melted microcrystalline wax are
19 vigorously mixed with the liquid paraffin and
20 solvent mixture to form a creamy liquid useful as a
21 hand cream and paint remover as well as a fire
22 starter. The hand cream paint remover may have from
23 400-800 parts by volume of liquid petroleum solvent
24 mixed with 10-200 parts by volume of normal paraffin
25 or isoparaffin and 150-200 parts by volume of
26 microcrystalline wax and further mixed with about 1-
27 20 parts by volume of an ionic surfactant and may
28 include 1-10 parts by volume of aloe oil and 1-10
29 parts by volume of eucalyptus oil.